Amended by Article 34.

WHAT IS CLAIMED IS:

1. A process for the recovery of lactic acid from aqueous solutions containing at least one water-soluble lactate salt and having a pH of about between 4 and 14, comprising the steps of;

a) contacting said aqueous solution with a cation exchanger which is at least partially in its acid form, said cation exchanger being water immiscible in both acid and salt form, whereby ion exchange is effected, protons are transferred from said cation exchanger to the aqueous solution to acidulate it and to form lactic acid therein and cations from said aqueous solution are bound by said cation exchanger to form a cations carrying cation exchanger;

b) reacting said cations carrying cation exchanger to convert it into a cation exchanger which is at least partially in its acid form and to a second product, which second product is basic and comprises the cation of said salt; and

c) recovering lactic acid from said lactic acid-containing acidulated aqueous solution by methods known per se.

2. A process according to claim 1, wherein said cation exchanger is a liquid cation exchanger.

3. A process according to claim 1, wherein said cation exchanger is a solid cation exchanger.

4. A process according to claim 1, wherein said reaction in said step (b) is a decomposition reaction.

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5. A process according to claim 1, wherein said lactic acid is recovered from said lactic acid-containing acidulated aqueous solution simultaneously with the acidulation thereof.

6. A process according to claim 1, wherein said lactic acid is recovered from said lactic acid-containing acidulated aqueous solution after the acidulation of said solution.

7. A process according to claim 1, wherein said second product is used as a neutralizing agent in fermentation.

8. A process according to claim 1, wherein said recovery of said lactic acid from the acidulated aqueous solution is effected by contacting said solution with a lactic acid extractant.

9. A process according to claim 1, wherein said recovery of said lactic acid from the acidulated aqueous solution is effected by contacting said solution with a lactic acid absorbent.

10. A process according to claim 1, wherein said recovery of said lactic acid from the acidulated aqueous solution is effected by contacting said solution with an anion exchanger which is at least partially in its free base form, which anion exchanger is water immiscible in both base and salt form.

11. A process according to claim 10 wherein said anion exchanger is a liquid anion exchanger.

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12. A process according to claim 10, wherein said anion exchanger is a solid anion exchanger.

13. A process according to claim 10, wherein said anion exchanger, in its free base form has an apparent basicity corresponding to pKa of not higher than 6.

14. A process according to claim 10, wherein said anion exchanger, in its free base form has an apparent basicity corresponding to pKa of not higher than 4.5.

15. A process according to claim 10, wherein said cation exchanger in its at least partially acid form and said anion exchanger in its at least partially free base form are simultaneously contacted with said lactic acid salt-containing aqueous solution.

16. A process according to claim 10, wherein said cation exchanger in its at least partially acid form and said anion exchanger in its at least partially free base form are repeatedly alternately contacted with said lactic acid salt-containing aqueous solution.

17. A process according to claim 10, wherein said anion exchanger is separated from said aqueous solution by an anion exchange membrane.

18. A process according to claim 10, wherein said anion exchanger is separated from said aqueous solution by a dense neutral hydrophilic membrane.

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19. A process according to claim 10, wherein said anion exchanger is separated from said aqueous solution by a dense neutral hydrophobic membrane.

20. A process according to claim 1, wherein said cation exchanger is separated from said aqueous solution by a cation exchange membrane.

21. A process according to claim 1, wherein said cation exchanger is separated from said aqueous solution by a dense neutral hydrophilic membrane.

22. A process according to claim 1, wherein said cation exchanger is separated from said aqueous solution by a dense neutral hydrophobic membrane.

23. A process according to claim 1, wherein said cation exchanger, in its free acid form, has an apparent acidity corresponding to a pKa of not lower than 2.

24. A process according to claim 4, wherein said decomposition of said cation exchanger salt is by hydrolysis to form the cation exchanger in its at least partially acid form and the second product is a base of the cation forming the salt.

25. A process according to claim 24, wherein said base is selected from the group consisting of ammonia and hydroxides, carbonates and bicarbonates of alkali and alkaline earth metals.

26. A process according to claim 24, wherein hydrolysis is conducted at a temperature higher than 80°C.

27. A process according to claim 4, wherein said second decomposition product is transferred into a vapor phase.

28. A process according to claim 4, wherein said lactic acid salt is ammonium lactate and said second decomposition product is ammonia.

29. A process according to claim 1, wherein said lactate salt is a product of fermentation.

30. A process according to claim 1, wherein the reaction of step (b) is conducted in a CO_2 containing atmosphere.

31. A process according to claim 1, wherein recovery of lactic acid from said acidulated aqueous solution is effected by distillation.

32. A process according to claim 10, wherein said lactic acid is recovered from said anion exchanger.

33. A process according to claim 1, wherein recovery of lactic acid from said acidulated aqueous solution is effected by distillation of its ester.

34. A process for the recovery of lactic acid from aqueous solutions containing at least one water-soluble lactate salt and having a pH of about between 4 and 14, comprising the steps of;

a) contacting said aqueous solution with a cation exchanger which is at least partially in its acid form, said cation exchanger being water immiscible in both acid and salt form, whereby ion exchange is effected, protons are transferred from said cation exchanger to the aqueous solution to acidulate it and to form lactic acid therein and cations from said aqueous solution are bound by said cation exchanger to form a cations-carrying cation exchanger;

b) simultaneously recovering lactic acid from said lactic acid-containing acidulated aqueous solution by methods known per se; and

c) reacting said cations-carrying cation exchanger to convert it into a cation exchanger which is at least partially in its acid from and to a second product, which second product is basic and comprises the cations of said salt.

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Subt A1

add B1